UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/774,065	01/31/2001	Jong-Sung Kim	053785-5002	1818

9629 7590 07/02/2003

MORGAN LEWIS & BOCKIUS LLP
1111 PENNSYLVANIA AVENUE NW
WASHINGTON, DC 20004

EXAMINER
NGUYEN, HOAN C

ART UNIT	PAPER NUMBER
2871	

DATE MAILED: 07/02/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/774,065	KIM, JONG-SUNG	
	Examiner	Art Unit	
	HOAN C. NGUYEN	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,4-8 and 10-12* is/are pending in the application.

4a) Of the above claim(s) *3 and 9* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-2, 4-8 and 10-12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 5/28/2003 has been entered.

Claims 3 and 9 have been cancelled in previous Amendment filed on12/13/2002 (paper 8). Claims 1-2, 4-8 and 10-12 are still pending.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-2, 4-8 and 10-12 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The independent claims 1 and 7 are rejected since a limitation "the second pressurizing and heating process is sufficient to soften the seal material" considers as New Subject Matter since this limitation does not disclose in the original specification.

Claims 2, 4-6 and 10-12 are rejected since they depend on the infinite claims.

Specification discloses ONLY:

- FIGS. 5A and 5B illustrate processes of attaching a pair of substrates according to the preferred embodiment of the present invention. In the present invention, a thermoplastic resin is employed as a seal pattern. Unlike a thermosetting resin, the thermoplastic resin can be melted and solidified several times by applying thermal heat (page 12 lines 8-13). However, this paragraph does not specify the thermoplastic resin can be melted (thereby softened) under which process.
- FIG. 5B illustrates a second pressurizing and heating process of the liquid crystal cell that contains the liquid crystal material 20 therein. The second pressurizing and heating process accomplish the second cell gap of the distance. The second cell gap of the distance is the final cell gap of the liquid crystal cell. The second cell gap is adjustable in the pressurizing and heating process, so that it can be determined by design. The second cell gap may be less than 4μm, so that it is narrower than the first cell gap (page 13 lines 5-13).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 1, 4-5 and 7, 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shin et al. (US6086443A).

In regard to claims 1, 4-5 and 7, 10-11, Shin et al. teach (Fig. 1 col. 1 lines 21-48, Figs. 3-6, experiment 4, col. 7 lines 54-67) a method of fabricating a liquid crystal display panel having first and second substrates, wherein

- The first cell gap should be less than 5.7μm (claims 4 and 10) at first pressurizing and heat process (hot press step) with 0.6 kg f/cm^2, thus cell gap is at least 5μm ("at least 5μm" means greater or equal 5μm) for adhering seal members to substrates.
- the second cell gap should be in a range 4.26-4.33μm or at least 4 μm (claims 5 and 11) ("at least 4μm" means greater or equal 4μm) at second pressurizing and heating process with P1/P2/P3 (0.7/1.0/0.9 kg f/cm^2) of the end seal step for adhering the spacers to substrates.

However, Shin et al. fail to disclose explicitly the first and second orientation films.

It was well known art that the orientation films on substrates for aligning the liquid crystal molecules to modulate the light.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a method of fabricating a LCD panel as Shin et al disclosed with the orientation films on substrates for aligning the liquid crystal molecules to modulate the light.

1. Claims 1-2, 7-8 and 12 rejected under 35 U.S.C. 103(a) as being unpatentable over Nakahara et al. (US6104467A) in view of Shin et al. (US6086443A).

In regard to claims 1-2, Nakahara et al. teach (Figs. 1 and 4, col. 5 line 65 to col. 7 line 32) a method of fabricating a liquid crystal display panel having first and second substrates, the method comprising the steps of

- forming first and second orientation films (alignment films 6 and 9) on the first and second substrates (1 and 2) , respectively;
- forming a seal material (seal member 10) at edges of the first substrate;
- assembling the first and second substrates with each other;
- performing a first pressurizing and heating process on the first and second substrates to form a first cell gap with pressure at normal temperature of 20-40° as shown in Fig. 4 (normal temperature pressuring process);
- injecting a liquid crystal material into the first cell gap;
- sealing the second cell gap.

In regard to claims 6 and 12, Nakahara et al. disclose as conventional art (Figs. 1 and 4) a method of fabricating a liquid crystal display panel having first and second substrates, wherein sealing is performed by using a thermoplastic resin (thermosetting resin including glass beads or the like operating as a spacer inside the seal is used, and

glass beads or plastic beads). Thermosetting resin can be thermoplastic used as conventional art for adhering under heating process.

In regard to claims 7-8, Nakahara et al. teach (Figs. 1 and 4) a method of fabricating a liquid crystal display panel having first and second substrates, the method comprising the steps of:

- assembling the first substrate 1 with the second substrate 2;
- performing a first pressurizing and heating process on the assembled substrates to have a first cell gap;
- injecting a liquid crystal material into the first cell gap;
- sealing the second cell gap;
- cutting the sealed panel into a unit cell, which is obvious step performing for cleaning the sealing materials.

However, Nakahara et al. fail to disclose performing second pressurizing and heating process on the first and second substrates to form a second cell gap, wherein the second heating process is sufficient to soften the seal material and the second cell gap is narrower than the first cell gap.

Shin et al. teach (col. 7 lines 54-67) performing second pressurizing and heating process with UV radiation (T3 in Fig. 7) on the first and second substrates to form a second cell gap, wherein the second heating process is sufficient to harden the seal material and the second cell gap is narrower than the first cell gap, then pressure P3 is maintained for hardening (T4 in Fig. 7).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a method of fabricating a LCD panel as Nakahara et al disclosed with (a) cutting the sealed panel into a unit cell obviously for cleaning the sealing materials, (b) sealing performed by using a thermoplastic resin for adhering under heating process and (c) performing second pressurizing and heating process with UV radiation (T3 in Fig. 7) on the first and second substrates to form a second cell gap, wherein the second heating process is sufficient to harden the seal material and the second cell gap is narrower than the first cell gap, then pressure P3 is maintained for hardening (T4 in Fig. 7) for binding.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HOAN C. NGUYEN whose telephone number is (703) 306-0472. The examiner can normally be reached on MONDAY-THURSDAY:8:00AM-4:30PM.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0530.

HOAN C. NGUYEN
Examiner
Art Unit 2871

chn
June 27, 2003

ROBERT H. KIM
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800